

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
8 July 2004 (08.07.2004)

PCT

(10) International Publication Number
WO 2004/057912 A2

(51) International Patent Classification⁷: **H04R 17/00**

(21) International Application Number:
PCT/GB2003/005616

(22) International Filing Date:
22 December 2003 (22.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0229954.3 20 December 2002 (20.12.2002) GB
0229952.7 20 December 2002 (20.12.2002) GB

(71) Applicant (for all designated States except US): NEW-LANDS TECHNOLOGY LIMITED [GB/GB]; Unit 3F, Newlands Science Park, Inglemire Lane, Hull, Humberside HU6 7TQ (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): METHERING-HAM, William, John [GB/GB]; Carr Farm, Hilston Road, Roos, Yorkshire HU12 0JB (GB). JOHNSON, David,

Anthony [GB/GB]; 2 Main Street, Kilnwick, Driffield, Yorkshire YO25 9JD (GB). SMITH, Brian, Douglas [GB/GB]; 15 Fairlawn Avenue, Chiswick, London W4 5EF (GB). MUNNS, Neil [GB/GB]; 161 Ella Street, Kingston-upon-Hull, Yorkshire HU5 3AT (GB). ASTON, Martin, Geoffrey [GB/GB]; 4 Pasture Close, Market Weighton, York, Yorkshire YO43 3QQ (GB).

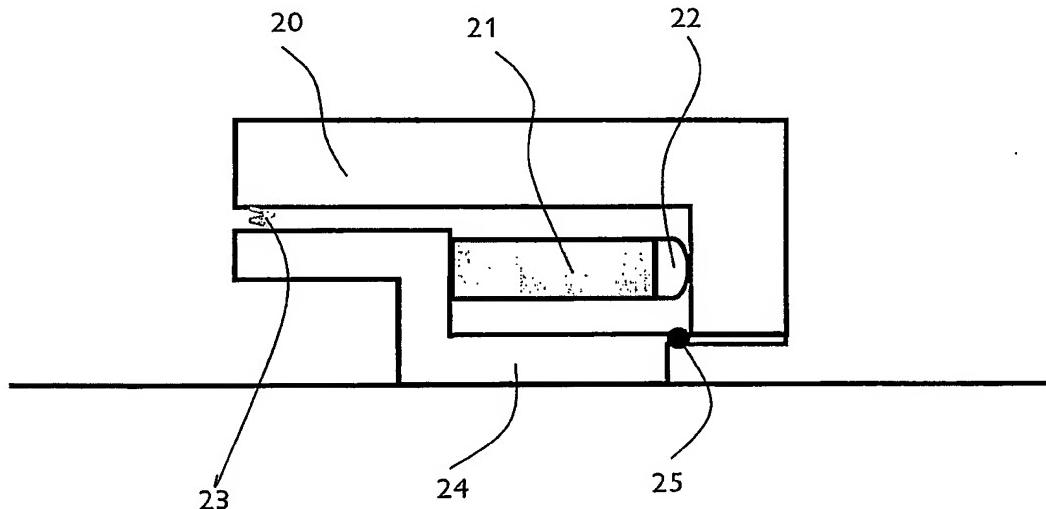
(74) Agent: LOVEN, Keith, James; Quantum House, 30 Tentercroft Street, Lincoln, Lincolnshire LNS 7DB (GB).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,

[Continued on next page]

(54) Title: ACOUSTIC ACTUATORS



WO 2004/057912 A2

(57) Abstract: An acoustic transducer comprises an active element (21) which changes in length along a first axis in response to an audiofrequency input signal, the element being mounted between an inertial mass (20) and a foot (24) which in use engages a surface whereby audiofrequency vibrations produced by the active element are transmitted to the surface, characterised in that the foot is hinged (25) connected to the inertial mass and the active element is located between the foot and the mass such that the angle between the first axis and the surface is less than 90°, in use.



SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

- *without international search report and to be republished upon receipt of that report*